Edge Detection Report

Name: Mahmoud Ahmed Ibrahim Youssef

Section : 3

The Original Image

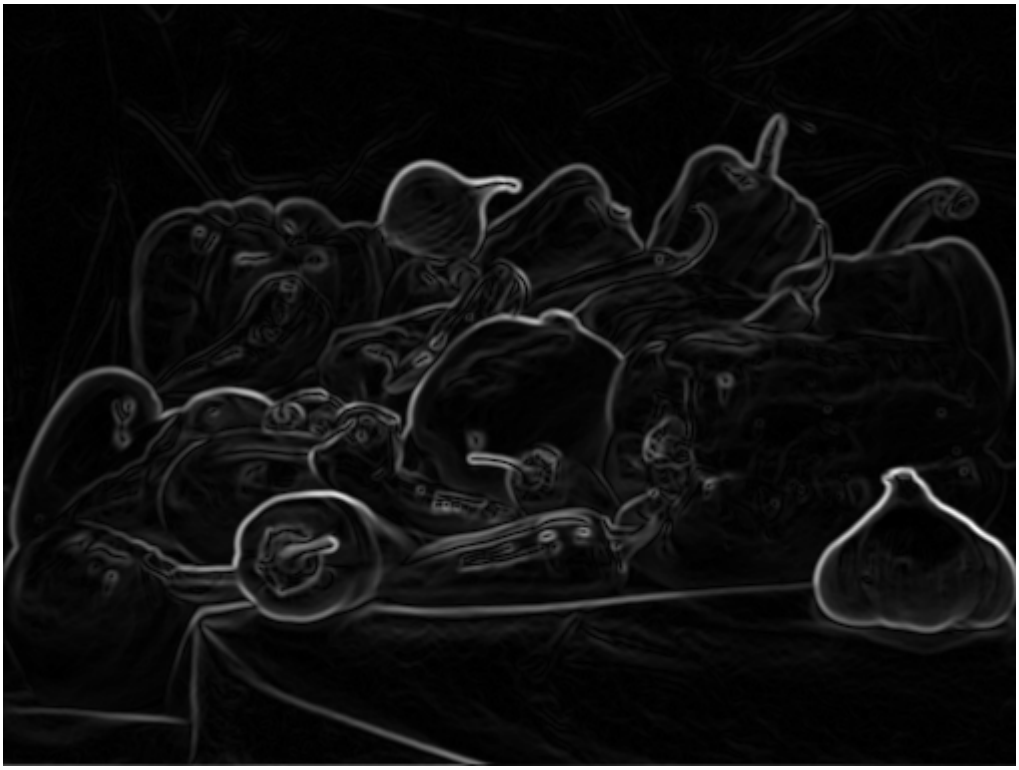
We want to apply three techniques of edge detection on this original image using :

- Gradient of Gaussian
- Laplacian of Gaussian
- Canny

Original Image

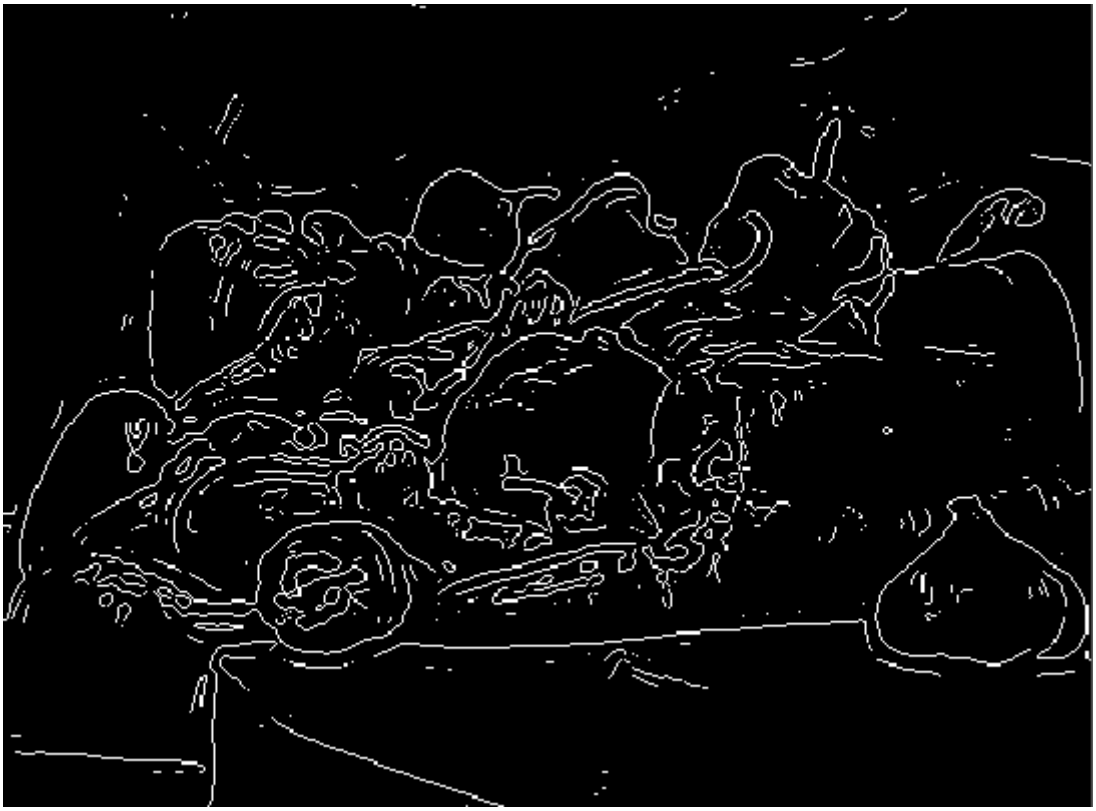
Applying Gradient of Gaussian Edge Detection Technique

```
%-------------------- Applying Gradient of Gaussian Edge Detection---------
originalImage = imread('peppers.png');
grayOriginalImage = rgb2gray(originalImage);
gaussianFilter = fspecial('gaussian', [3 3], 5);   % filter size = 3x3 & sigma = 5
filteredImage = imfilter(grayOriginalImage, gaussianFilter);
[Gx, Gy] = imgradientxy(filteredImage);
[Gmag, Gdir] = imgradient(Gx,Gy);
imshowpair(Gmag, Gdir,'montage');
```



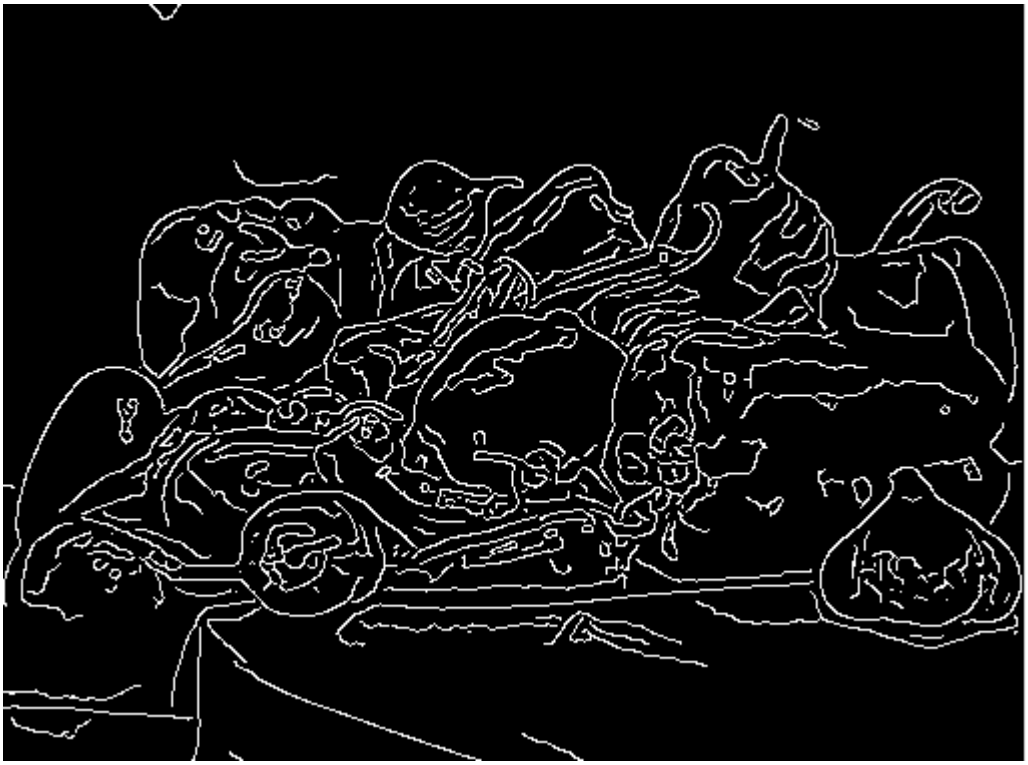
Applying Laplacian of Gaussian Edge Detection Technique

```
%-------------------- Applying Laplacian of Gaussian Edge Detection -------
originalImage = imread('peppers.png');
grayOriginalImage = rgb2gray(originalImage);
filteredImage = edge(grayOriginalImage, 'log');
imshow(filteredImage );
```



Applying Canny Edge Detection Technique

```
%-------------------- Applying Canny Edge Detection  ----------------------
originalImage = imread('peppers.png');
grayOriginalImage = rgb2gray(originalImage);
filteredImage = edge(grayOriginalImage, 'Canny');
imshow(filteredImage);
```



Technique Recommendation

I recommend using the first technique in the case of "peppers.png" image as it's much more smooth. We can see that in the second technique the image is so sharpened and there are a lot of unnecessary details. Finally in the canny and last technique we find that it's more cleaner than the second one as it applied a threshold so no more unnecessary details are shown.